Conducting a Household Water Audit

How much water do you use?

Knowing how much water you use is the first step toward getting a handle on water consumption. If you obtain water from a community water system, you probably receive a bill that tells you how much water you use, but you can also estimate your water use. As you evaluate your water use, try to look for ways to reduce your daily consumption.

Your water bill

First, determine whether your water is measured in cubic meters (m^3), cubic feet, or gallons (1 cubic meter = 35.3 cubic feet = 219 gallons = 1,000 litres). Most water utilities provide a bill that tells you how much water you consumed during the billing period, and also what your daily consumption is. If the daily consumption is not provided, calculate it by dividing the total amount of water used by the number of days in the billing period. It is important to look at your water use over at least an annual period, since water use can vary by season. Most people use more water in the warmer months for gardening, washing cars, and other outdoor uses.

Your water meter

Your water meter measures the total amount of water used by your home. Most water meters are located at the property line. Again, the meter may measure in cubic meters, cubic feet, or gallons.

Measuring flow

If your utility does not provide you with a periodic bill, or you obtain your water from your own well, you can still estimate your water use by determining how much water flows out of each fixture and multiplying that amount by the number of times the fixture is used each day. To measure the flow rate, turn the tap to the setting you normally use. Hold a container under the faucet for a total of ten seconds. Measure the amount of water collected and multiply that amount by six to get the volume used per minute. For toilets, shut off the valve in the toilet tank supply line and mark the water level in the tank. Flush the toilet, then refill the tank using a measured container to determine how much water is needed to flush the toilet.

To determine how much water is used each day in your household, estimate the number of minutes that each fixture is used per day, and multiply that amount by the flow from that fixture. For example, if your showerhead uses four gallons per minute, and you take a five-minute shower, you would use 4 x 5 = 20 gallons per shower.

Check for Leaks

An average of more than eight percent of residential water use is lost through leaking fixtures or pipes!

Check your meter
Turn off all water fixtures both inside and outside the home, and check the reading on your water meter. Wait one hour, making sure that no one uses water, then check the meter again. If the meter dial has moved, you have a leak somewhere in your building.

Pipes
A leaky pipe is usually pretty obvious. Visually inspect all piping in your home, and look for tell-tale water marks on walls or ceilings. If a pipe is leaking, replace or repair it.

Faucets
A leaking faucet is also easily identified, but do you know how much water can be wasted from what seems like an insignificant drip? Count the number of times that water drips from the faucet per minute. You can use the following chart to estimate the amount of water wasted, or try WaterWiser's drip calculator.

30 drops per minute	54 gallons per month
60 drops per minute	113 gallons per month
120 drops per minute	237 gallons per month
1/2" stream of water	1,014 gallons per month
1 1/2" stream of water	2,202 gallons per month

Drips can usually be eliminated by replacing worn washers, or by tightening or repacking the faucet. Replacement washers or repair kits for washerless faucets are available at hardware or home improvement stores.

Toilets
Toilet leaks are a common but potentially large source of water losses. A leaking toilet can waste anywhere from several gallons to more than one hundred gallons per day. In some cases, it's easy to identify a leaking toilet. If you have to jiggle the handle to make a toilet stop running, if you regularly hear sounds coming from a toilet that is not being used, or if a toilet periodically turns the water on (i.e. "runs") for 15 seconds or so without you touching the handle, you can be fairly certain that you have a leak. But sometimes, even if your toilet doesn't have any of these symptoms, it's still possible that it is leaking. These "silent leaks" can go undetected for long periods of time, potentially wasting thousands of gallons of water.

To check your toilet for “silent leaks”, carefully remove the cover on the toilet tank and set it aside. Remove any "in-tank" bowl cleaners and flush so that the water in both the bowl and the tank are clear. Add dye to the tank. You can use dye capsules or tablets available from the hardware store, but food coloring or powdered fruit drink mix also work well. Put enough dye in the tank water to give the water a deep color. Wait 30 minutes and don’t use the toilet during that time. After waiting 30 minutes, if the water in the bowl contains dye, you’ll know that the toilet is leaking. A properly operating toilet will store water in the tank indefinitely without any water running into the bowl.

There are two possible culprits when a toilet leaks, the flush valve or the refill valve. To determine which is responsible for your leak, draw a pencil line on the inside of the tank at the waterline. Turn the water supply off, either under the tank or at the main shutoff and wait 20 to 30 minutes. If the water level remains at the pencil mark, that means the leak is occurring at the REFILL VALVE, the unit in the left side of the tank. If the water level falls below the pencil mark, the FLUSH VALVE, the unit located in the center of the tank, is to blame. Most homeowners are capable of making their own toilet repairs. Visit your local home improvement store or hardware store, pick up the parts, turn off the water supply and follow the directions. With a little effort, you can save many gallons of water and possibly reduce your water bill at the same time.

Retrofit Your Fixtures and Appliances

Once you have repaired any leaks in your home or business, the next step is to evaluate the efficiency of your current fixtures and appliances. Sometimes simple retrofits or fixture replacements can save many gallons of water.

Faucets
A faucet aerator is a small circular screen that is screwed onto the faucet. It reduces flow by adding air to the water, giving the sensation of more water with less volume. An aerator can reduce the flow on a faucet to 1.5 to 2.5 gallons per minute, and is a very effective and cost-efficient way to reduce water consumption. Check to see if aerators are installed on your kitchen and bathroom faucets. Some older faucets may not be able to accommodate an aerator, but if the faucet will accommodate an aerator, one should be installed. Even if aerators are installed, they may be an older less-efficient variety. If the flow from your faucets (see “measuring flow”) exceeds 2.5 gallons per minute, you could reduce water use by installing new aerators.

An alternative is to install a new faucet. If you need to replace a faucet for any reason, be sure to purchase and install a faucet that uses 2.5 gpm or less.

Showerheads
Low-volume showerheads use 2.5 gallons per minute or less (older ones use as much as 5 gpm or more), with resulting savings of as much as 38 gallons per day per household. They save water through better mixing of air and water, different spray patterns, and narrower spray areas to give the sensation of a higher-volume shower. Some showerheads also feature temporary shut-off valves, which allow the user to turn the water off when shampooing or washing for even higher savings. Since showers use hot water as well as cold water, saving large volumes of water in the shower also saves energy, since the saved water does not need to be heated.

Toilets
Newer toilets use 1.6 gallons per flush, as opposed to the 4 or more gallons per flush used by older toilets. If you are replacing a toilet, plumbing codes require more efficient toilets to be installed. You may also want to consider waterless toilets, if plumbing codes allow them. You can easily and inexpensively reduce water use in older toilets, however, simply by installing a displacement device. These devices work by occupying space that would otherwise be filled by water, thereby reducing the amount of water used for each flush. Hardware stores sell plastic or rubber bags that can be filled with water and hung from the side of the tank, or you can simply fill an empty half-gallon milk jug or other durable container with water and place it in the toilet tank. Each time you flush, you'll save a half-gallon or more of water. Toilet dams work in a similar fashion, by blocking off an area of the toilet tank to decrease the amount of water per flush. Another device that can be used is an early closure device that causes the flapper to close early, releasing a reduced amount of water per flush.

Appliances
An average of more than 22% of residential water is used to wash clothes. High-efficiency clothes washers are now available that use only 27 gallons per load, as opposed to 39 to 43 gallons per load with a conventional washer. When it's time to replace your clothes washer, consider purchasing one of the high-efficiency models. Newer models of dishwashers that use 7 gallons per load can save about 50% over older models.

Examine and Change Your Habits

Some of the easiest and certainly least expensive ways to conserve water involve making simple changes in the ways you use water. A complete water audit should involve a close look at your family's water use habits. Do you wait for a full load to run the dishwasher or clothes washer? Do you let the water run while brushing your teeth or shaving? Can you decrease the length of your shower? See our Water Conservation Tips for Homeowners for a comprehensive list of habits you might want to rethink.

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